

NMDCAT

FULL LENGTH PAPER-4

QUARTER SYLLABUS - 3

Total MCQs: 200

Max. Marks: 200

BIOLOGY

- Q.1 Which element plays an important role in opening and closing of stomata?
(a) Phosphorous (b) Nitrogen
(c) Potassium (d) Calcium
- Q.2 The root hair absorbs water from the soil, when water potential of root cell is _____ than the soil.
(a) More (b) Equal
(c) Lesser (d) More or less
- Q.3 The absorbed water can rise to highest point by:
(a) Root pressure (b) Imbibition force
(c) Force of capillary (d) Transpiration pull
- Q.4 All environmental factors are sense by guard cell except:
(a) Temperature (b) Nitrogen in air
(c) Light intensity (d) Relative humidity
- Q.5 The main component of honey dew dry matter/phloem sap is:
(a) Glucose (b) Starch
(c) Maltose (d) Sucrose
- Q.6 Which of the following is incorrect about cyclic photophosphorylation?
(a) Only PS I is involved (b) No photolysis occurs
(c) Only synthesis of ATP occurs (d) Synthesis of NADPH occurs
- Q.7 Salivary glands which are not involved in the chemical digestion of carbohydrates are:
(a) Sublingual (b) Sub-mandibular
(c) Sub-maxillary (d) Parotid
- Q.8 Which is a common site for the digestion of proteins, lipids and carbohydrates?
(a) Oral cavity (b) Small intestine
(c) Stomach (d) Large intestine
- Q.9 Which of the following in stomach is the result of stimulation of parasympathetic system?
(a) Increased Churning (b) Increased pH
(c) Increased carbohydrate digestion (d) Decreased secretions
- Q.10 Which of the following is involved in the buffering of acidic chyme?
(a) Trypsinogen (b) Bile
(c) Chymotrypsin (d) Sodium bicarbonate
- Q.11 Which of the following is incorrectly matched?
(a) Intestine: Brush border epithelium (b) Stomach: J-shaped
(c) Tongue: Skeletal muscle (d) Oral cavity: Emulsification
- Q.12 The cells of stomach which help in providing suitable medium for the activation of pepsinogen:
(a) Zymogen cells (b) Chief cells
(c) Oxyntic cells (d) Mucous cells
- Q.13 Bile is secreted by:
(a) Acinar cells (b) Gall bladder
(c) Hepatic cells (d) Kupffer cells
- Q.14 Which of the following is not true about secretin?
(a) Increases protein digestion in stomach (b) Increases hepatic secretions
(c) Increases pancreatic secretions (d) Released from duodenum
- Q.15 Intrinsic factor is secreted by:
(a) Pancreas (b) Liver
(c) Stomach (d) Duodenum

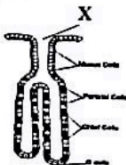
Q.16 Pick the incorrect pair among the following with respect to enzymes, their substrates and products:

Enzyme	Substrate	Products
(a) Pepsin	Proteins	Polypeptides
(b) Enterokinase	Trypsinogen	Trypsin
(c) Erypsin	Polypeptides	Dipeptides
(d) Amylopsin	Starch	Maltose

Q.17 A female patient of 18 years comes to a physician. She has under developed feminine characteristics and seems psychologically immature. She is probably suffering from:

- (a) Orthorexia nervosa
(b) Anorexia nervosa
(c) Bulimia nervosa
(d) Dyspepsia

Q.18 What is 'X' in the following diagram?



- (a) Gastric gland
(b) Gastric pit
(c) Pyloric end
(d) Cardiac sphincter
- Q.19 Total number of valves in the human heart is:
(a) 1
(b) 2
(c) 4
(d) 8
- Q.20 Which property of cardiac muscles cannot be seen in skeletal muscles?
(a) Mechanism of action
(b) Actin and myosin
(c) Myofibrils and myofilaments
(d) Gap junctions
- Q.21 Atrial musculature receives direct impulses from:
(a) Pacemaker
(b) AV node
(c) Internodal fibers
(d) Somatic nervous system
- Q.22 Which of the following blood vessels are slightly muscular?
(a) Arteries
(b) Veins
(c) Aorta
(d) Capillaries
- Q.23 White blood cells can come across capillary wall unlike RBCs because:
(a) They are smaller in size
(b) They are diffusible
(c) They have ability to squeeze
(d) They are nucleated
- Q.24 Lymphoid masses can be observed in digestive system walls at the level of:
(a) Mucosa
(b) Muscular layer
(c) Serosa
(d) Sphincters
- Q.25 Direction of flow of lymph is always towards:
(a) Heart
(b) Subclavian vein
(c) Thymus
(d) Thoracic duct
- Q.26 Lymph nodes are never present in:
(a) Ventricles
(b) Axilla
(c) Groin
(d) Neck region
- Q.27 Antigen is a foreign protein or any other molecule which stimulates the formation of:
(a) MHC complex
(b) Immunogens
(c) Mucus
(d) Antibodies
- Q.28 Skin and mucous membranes are part of the body defense system and they form the:
(a) Physical barriers
(b) Mechanical barriers
(c) Chemical barriers
(d) Biological barriers
- Q.29 Thermoregulation is maintenance of temperature:
(a) At fixed point
(b) In a wide range
(c) According to external temperature
(d) Within tolerable range
- Q.30 Activation of sweat glands for thermoregulation is a:
(a) Structural adaptation
(b) Physiological adaptation
(c) Behavioral adaptation
(d) Anatomical adaptation

- PREPARATION
- Q.31 ADH helps to make body fluids:
(a) Isotonic
(c) Hypo-osmotic
(b) Hyperosmotic
(d) Hypertonic
- Q.32 Substances selectively reabsorbed at the level of PCT and DCT enter into the blood of:
(a) Vasa recta
(c) Efferent arterioles
(b) Glomerulus
(d) Peritubular capillaries
- Q.33 In case of end stage renal disease, the best available option is:
(a) Arterial dialysis
(c) Kidney transplant
(b) Peritoneal dialysis
(d) All A, B, C
- Q.34 The artificial kidney employs _____ mechanism for removal of wastes from blood.
(a) Active absorption
(c) Carrier mediated
(b) Diffusion
(d) Hormonal
- Q.35 The region between two thin filaments in A-band is:
(a) A line
(c) H-zone
(b) Z-line
(d) M-line
- Q.36 During strenuous exercise when more energy is required in muscle contraction then which of the following can be used as secondary source of energy?
(a) Glucose
(c) Fructose
(b) Phosphocreatin
(d) Lactic acid
- Q.37 Total bones involved in the formation of each half of pelvic girdle are:
(a) 1
(c) 3
(b) 2
(d) 4
- Q.38 In human vertebral column, the maximum number of vertebra is of:
(a) Cervical vertebrae
(c) Lumbar vertebrae
(b) Thoracic vertebrae
(d) Sacral vertebrae
- Q.39 The joint which allows rotational movement only is:
(a) Hinge joint
(c) Pivot joint
(b) Saddle joint
(d) Multistage joint
- Q.40 It typically begins gradually with stiffness of jaws and neck muscles and progresses:
(a) Muscle fatigue
(c) Tetany
(b) Muscle cramp
(d) Tetanus
- Q.41 The hydrolysis of the ATP that is bound to myosin causes:
(a) Release of myosin head from actin filament
(c) Irreversible binding of actin filament
(b) Reversible binding of actin filament
(d) Phosphorylation of actin filament
- Q.42 The shoulder and hip joints are example of:
(a) Gliding
(c) Pivot
(b) Saddle
(d) Ball and socket
- Q.43 Triads in skeletal muscle consist of which of the following?
(a) Sarcoplasm, sarcoplasmic reticulum, Ca^{+2}
(c) Two T-tubules and one terminal cisterna
(b) Two terminal cisternae and one T-tubule
(d) One terminal cisternae and one T-tubule
- Q.44 Bone matrix is hardened by:
(a) Haversian canals
(c) Bone marrow tissue
(b) Canaliculi
(d) Calcium phosphate
- Q.45 Over-activity of sympathetic nervous system causes:
(a) Disturbance of vision
(c) Decrease in blood pressure
(b) Increased peristalsis
(d) Increase in heart rate
- Q.46 The right and left cerebral hemispheres are connected by a thick band of nerve fibers called:
(a) Medulla
(c) Pons
(b) Corpus callosum
(d) Hippocampus
- Q.47 Schwann cells are specialized for:
(a) Formation of CSF
(c) Conduction of nerve impulse
(b) Formation of myelin sheath
(d) Cell division of neurons
- Q.48 Cell bodies of sensory neurons of spinal nerve are commonly present in:
(a) Gray matter
(c) Dorsal root ganglia
(b) White matter
(d) Ventral root ganglia

- Q.49** Sciatic nerve is an example of:
 (a) Motor cranial nerve (b) Mixed cranial nerve
 (c) Motor spinal nerve (d) Mixed spinal nerve
- Q.50** Resting axonal membrane is:
 (a) Unpolarized and more permeable to Na^+ (b) Polarized and more permeable to Na^+
 (c) Unpolarized and more permeable to K^+ (d) Polarized and more permeable to K^+
- Q.51** Chemical called _____ are involved in the transmission of impulses at chemical synapse.
 (a) Neurohormones (b) Receptors
 (c) Neurotransmitters (d) Interferons
- Q.52** The thyroxine release from thyroid gland and acts directly on
 (a) Iodine metabolism (b) Protein metabolism
 (c) Glucose metabolism (d) Basal metabolic rate
- Q.53** Which of the following disease is not related to over-activity of endocrine glands:
 (a) Cushing's disease (b) Diabetes mellitus
 (c) Grave's disease (d) Acromegaly
- Q.54** Which of the following is not a function of hormones released from B?



- (a) Increase blood glucose
 (c) Increased Na^+ reabsorption
- Q.55** The testes are situated _____ the abdominal cavity within a pouch called _____.
 (a) Inside, Testicular lobules (b) Outside, Vas deferens
 (c) Outside, scrotum (d) Inside, scrotum
- Q.56** Type of cells in human testes which produce testosterone are called:
 (a) Interstitial cells (b) Germ cells
 (c) Sertoli cells (d) Spermatoocytes
- Q.57** Which one of the following differentiates directly into mature sperm?
 (a) Primary spermatocyte (b) Secondary spermatocyte
 (c) Spermatogonium (d) Spermatid
- Q.58** In human female meiosis II is not completed until:
 (a) Fertilization (b) Birth
 (c) Implantation (d) Puberty
- Q.59** Androgens stimulates:
 (a) Fertilization (b) Spermatogenesis
 (c) Oogenesis (d) Labour
- Q.60** Which of the following is not a male sex accessory gland?
 (a) Seminal vesicle (b) Prostate
 (c) Epididymis (d) Bulbourethral

CHEMISTRY

- Q.61** Which of the following alkali metals is most reactive?
 (a) Na (b) K
 (c) Li (d) Cs
- Q.62** The elements of I-A group react with water violently and make the solution
 (a) Neutral (b) Acidic
 (c) Alkaline (d) Amphoteric
- Q.63** Which is NOT periodic property?
 (a) Ionization energy (b) Melting point
 (c) Electron affinity (d) Coordination number
- Q.64** Molten sodium burns with which of the following flame in a chlorine atmosphere to form sodium chloride
 (a) Black (b) Green
 (c) violet (d) Yellow
- Q.65** Which of the following alkali metals can form superoxide on reaction with oxygen?
 (a) Potassium (b) Rubidium
 (c) Caesium (d) All of these

- PREPARATION
- Q.66 IUPAC name of vinyl acetylene is
 (a) But-3-en-1-yne
 (b) But-2-en-1-yne
 (c) But-1-en-3-yne
 (d) But-1-en-2-yne
- Q.67 The hydrocarbon which is most reactive
 (a) Alkene
 (b) Alkyne
 (c) Alkane
 (d) Benzene
- Q.68 The hydrocarbon which does NOT show acidic nature is
 (a) Ethyne
 (b) 1-Butyne
 (c) 2-Butyne
 (d) Propyne
- Q.69 The elements of _____ group has highest electrical conductivity
 (a) IIIA
 (b) IA
 (c) IIA
 (d) IB
- Q.70 Incorrect 1st ionization energy order is
 (a) Ne > F
 (b) F > Ne
 (c) Be > B
 (d) Ar > Cl
- Q.71 Which of the following represent elements in order of increasing atomic size?
 (a) Br, Cl, F
 (b) Li, Be, B
 (c) S, P, Si
 (d) Ca, Mg, Be
- Q.72 The correct melting point order is
 (a) Al > Si
 (b) Na > Mg
 (c) P > S
 (d) S > P
- Q.73 The lowest 1st ionization energy would be associated with which of the following configuration
 (a) 1s², 2s², 2p⁶, 3s¹
 (b) 1s², 2s², 2p⁵
 (c) 1s², 2s², 2p³
 (d) 1s², 2s², 2p⁶
- Q.74 The least electropositive, among alkaline earth metals
 (a) Be
 (b) Mg
 (c) Ca
 (d) Ba
- Q.75 Which of the following compounds is more soluble in water?
 (a) Ba(CO₃)₂
 (b) Mg(CO₃)₂
 (c) Sr(CO₃)₂
 (d) Ca(CO₃)₂
- Q.76 Which one of the following does not react with steam?
 (a) Li
 (b) Na
 (c) Mg
 (d) Be
- Q.77 A suspension of _____ in water is known as milk of lime is
 (a) Mg(OH)₂
 (b) MgO
 (c) Ba(OH)₂
 (d) Ca(OH)₂
- Q.78 Which of the following is amphoteric oxide?
 (a) BaO
 (b) CaO
 (c) MgO
 (d) BeO
- Q.79 $M + 2H_2O \rightarrow M(OH)_2 + H_2$ whereas "M" in the above reaction may be
 (a) Be
 (b) Na
 (c) Ca
 (d) Mg
- Q.80 Which one of the following is the least soluble in water?
 (a) Mg(OH)₂
 (b) Ca(OH)₂
 (c) Ba(OH)₂
 (d) Sr(OH)₂
- Q.81 Which of the following is NOT correct decomposition reaction?
 (a) $4LiNO_3 \rightarrow 2Li_2O + 4NO_2 + O_2$
 (b) $2Mg(NO_3)_2 \rightarrow 2MgO + 4NO_2 + O_2$
 (c) $CaCO_3 \rightarrow CaO + CO_2$
 (d) $2Ba(NO_3)_2 \rightarrow BaO + 2N_2O + O_2$
- Q.82 Thermal decomposition of _____ is more easy
 (a) CaCO₃
 (b) MgCO₃
 (c) BaCO₃
 (d) BeCO₃
- Q.83 The number of unpaired electrons in d-orbital of Fe³⁺ are
 (a) 6
 (b) 4
 (c) 5
 (d) 3

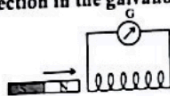
- Q.84 Which of the following non-typical transition element present in IIIB group is?
 (a) Sc (b) Y
 (c) Zn (d) Both (a) and (b)
- Q.85 How many unpaired electrons are there in Cu (II)?
 (a) 0 (b) 1
 (c) 2 (d) 3
- Q.86 Which one of the following is a neutral ligand?
 (a) Cyano (b) Hydrazine
 (c) Acetato (d) Oxalato
- Q.87 In which complex ligand makes ring like structure
 (a) $[Pt(C_2O_4)_2]^{2-}$ (b) $[Ag(NH_3)_2]Cl$
 (c) $[Fe(CO)_5]$ (d) $[Co(NO_2)_3(NH_3)_3]$
- Q.88 The IUPAC name of the coordination compound $K_4[Fe(CN)_6]$ is
 (a) Potassium hexacyano ferrate (III) (b) Tripotassium hexacyano ferrate (II)
 (c) Potassium hexacyano ferrate (II) (d) Potassium hexacyano iron (II)
- Q.89 The electronic configuration of Ni is
 (a) $[Ar]3d^34s^2$ (b) $[Ar]3d^44s^2$
 (c) $[Ar]3d^104s^1$ (d) $[Ar]3d^44s^2$
- Q.90 Which of the following ions of transition metal form colourless compound
 (a) V^{+5} (b) Cu^{+2}
 (c) Ti^{+3} (d) Fe^{+2}
- Q.91 If a complex of chromium absorbs red light in wavelength region of 650-700nm then it looks like to be
 (a) Blue (b) Green
 (c) Yellow (d) Red
- Q.92 The geometry and hybridization of $[Co(NH_3)_6]$ complex
 (a) Octahedral, d^2sp^3 (b) Tetrahedral, sp^3
 (c) Trigonal bipyramidal, dsp^3 (d) Square planar, dsp^3
- Q.93 A transition element X has configuration $[Ar]3d^1$ in its +3 oxidation state, its atomic number will be
 (a) 25 (b) 26
 (c) 22 (d) 29
- Q.94 The number of d-electrons of Cr in $[Cr(NO_2)_6]^{3-}$ ions is
 (a) 2 (b) 3
 (c) 4 (d) 5
- Q.95 The functional group present in given compound is, $CH_3-CH_2-COOCH_3$
 (a) Carboxyl (b) Ether linkage
 (c) Ester (d) Carbonyl
- Q.96 The number of sp^3 hybridized carbons in 1-pentene-4-yne are
 (a) One (b) Two
 (c) Five (d) Zero
- Q.97 $Br_2 + CCl_4$ is used to distinguish between
 (a) C_2H_6 and C_6H_6 (b) C_2H_4 and C_2H_2
 (c) C_6H_6 and C_3H_8 (d) C_2H_4 and C_2H_6
- Q.98 $X + HBr \rightarrow CH_3CH(Br)CH_3$ where X in the above reaction is
 (a) $CH_3-CH=CH_2$ (b) $CH_3-H_2C-CH_3$
 (c) $CH_3-CH_2-CH_2-Br$ (d) $CH_3-C \equiv CH_2$
- Q.99 The combustion of one mole of C_3H_8 will produce how many moles of CO_2
 (a) 4 (b) 3
 (c) 6 (d) 8
- Q.100 The most reactive among the following is
 (a) Chlorobenzene (b) Benzene
 (c) Aniline (d) Benzaldehyde
- Q.101 Which of the following contain isolated rings?
 (a) Biphenyl (b) Anthracene
 (c) Phenanthrene (d) Naphthalene
- Q.102 Which of the following reactions confirm the presence of saturation in benzene?
 (a) Bromination in sunlight (b) Bromination with $FeBr_3$
 (c) Catalytic oxidation (d) Hydrogenation

- Q.103 Which alkene could exist in cis and trans forms?
(a) $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH=CH}_2$
(b) $\text{CH}_3\text{-CH}_2\text{-CH=CHCH}_3$
(c) $\text{CH}_3\text{-CH}_2\text{-(CH}_2\text{)C=CH}_2$
(d) $\text{CH}_3\text{-CH=C(CH}_3\text{)-CH}_3$
- Q.104 What is the IUPAC name for the following compound?
 $\text{CH}_3\text{-C(CH}_3\text{)}_2\text{-CH}_2\text{-CH(CH}_3\text{)}_2$
(a) 1,3-pentamethylpropane
(b) 2,4,4-trimethylpentane
(c) 1,1,3,3-tetramethylbutane
(d) 2,2,4-trimethylpentane
- Q.105 The group which activates the benzene ring
(a) -CHO
(b) -NH_2
(c) -COOH
(d) $\text{-SO}_3\text{H}$
- Q.106 The catalyst used in Friedel Craft reaction is
(a) CaCl_2
(b) CuCl_2
(c) AlCl_3
(d) BCl_3
- Q.107 The bond between carbon 2 and 3 in the $\text{CH}_3\text{-CH=CH}_2$ involves the hybridization
(a) sp^2 and sp^2
(b) sp and sp^2
(c) sp and sp
(d) sp^2 and sp^1
- Q.108 Alkanoic acid and alkyl alkanoate are _____ isomer of each other
(a) Chain
(b) Functional group
(c) Positional
(d) Metamerism
- Q.109 When 2-Bromobutane reacts with alcoholic KOH the major product is
(a) $\text{CH}_3\text{-CH=CH-CH}_3$
(b) $\text{CH}_3\text{-CH}_2\text{-CH(OH)-CH}_3$
(c) $\text{CH}_3\text{-CH}_2\text{-CH=CH}_2$
(d) $\text{CH}_3\text{-CH}_2\text{-CO-CH}_3$
- Q.110 Hydrogenation of benzene in the presence of Ni at 200°C produces
(a) Cyclohexane
(b) Cyclohexadiene
(c) Cyclohexene
(d) Cyclohexatriene
- Q.111 Which of the following is an aromatic heterocyclic compound?
(a) Aniline
(b) Toluene
(c) Phenol
(d) Pyridine
- Q.112 Conversion of alkyl halide to alkenes is an example of
(a) Addition reaction
(b) Substitution reaction
(c) β -elimination
(d) Aromatization
- Q.113 Alkenes usually undergo _____ reaction
(a) Nucleophilic addition
(b) Electrophilic addition
(c) Electrophilic Substitution
(d) Nucleophilic substitution
- Q.114 When 1-butene reacts with cold dilute KMnO_4 in basic media, the product formed will be
(a) 1,1-Butan-diol
(b) 1,3-Butan-diol
(c) But-1,2-diol
(d) But-1,4-diol
- Q.115 The number of chain isomers of the alkane C_6H_{14} is
(a) 4
(b) 6
(c) 5
(d) 7
- Q.116 Alkanol and alkoxy alkane show the phenomenon of
(a) Position isomerism
(b) Functional group isomerism
(c) Metamerism
(d) Cis-trans isomerism
- Q.117 The Markownikof's rule is applicable only on
(a) 2-Butene
(b) 2-Bromo-3-chloro-2-butene
(c) 2,3 Dimethyl-2-butene
(d) 1-butene
- Q.118 Benzene does not undergo addition reactions easily because
(a) It has a cyclic structure
(b) Resonance stabilization system
(c) Double bonds are very strong
(d) It has six hydrogen atoms
- Q.119 Trans 2-Butene can be obtained from 2-Butyne using
(a) H_2 / Pd (BaSO_4), quinoline
(b) H_2 / Pd
(c) LiAlH_4
(d) Na / liq. NH_3 , -33°C
- Q.120 Benzene reacts with propanoyl chloride in presence of AlCl_3 to give
(a) Ethyl phenyl ketone
(b) Acetophenone
(c) Benzyl chloride
(d) Benzophenone

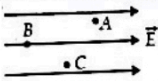
PHYSICS

- Q.121** The resistivity in a metallic conductor increases with temperature. It is due to
 (a) Increase in collision frequency (b) Decrease in drift velocity of electrons
 (c) Increase in free electron density (d) All of these
- Q.122** The net charge on a capacitor is
 (a) Infinity (b) $q/2$
 (c) $2q$ (d) Zero
- Q.123** The energy stored in a capacitor is the form of
 (a) Electrical potential energy (b) Magnetic energy
 (c) Elastic energy (d) Kinetic energy
- Q.124** When a charge particle moves in magnetic field perpendicularly magnetic force acts on it is qvB . Work done by magnetic force on charge particle is
 (a) Maximum (b) Negative
 (c) Minimum (d) Zero
- Q.125** Graph between V and I for non-ohmic devices
 (a) Straight line (b) Usually not straight-line
 (c) Always not straight line (d) Sometime straight line
- Q.126** A long straight current carrying conductor has current direction from bottom to top when held vertically. What will be the direction of magnetic field lines when observed from below the conductor?
 (a) Clockwise (b) Vertically upward
 (c) Anticlockwise (d) Vertically downward
- Q.127** If applied voltage to a capacitor become double then capacitance
 (a) Double (b) Four-time
 (c) Half (d) Remain same
- Q.128** Current in an electrolyte is carried by.
 (a) Only electrons (b) Only + ve ions
 (c) Only - ve ions (d) Both + ve & - ve ions
- Q.129** According to Faradays Law of electromagnetic induction
 (a) The direction of induced current is such that it opposes the cause producing it
 (b) The magnitude of induced emf produced in a Coil is directly proportional to rate of change of magnetic flux
 (c) The direction of induced emf is such that it opposes the cause producing it
 (d) None of the above
- Q.130** The slope of potential vs displacement
 (a) Electric potential difference (b) Electric potential energy
 (c) Electric field intensity (d) Capacitance
- Q.131** When a solid body is negatively charged by friction, it means that the body has
 (a) Acquired excess of electrons
 (b) Acquired some electron and lost a lesser number of protons
 (c) Lost some protons
 (d) Lost some positive ions
- Q.132** Two plates are 2cm apart. If a potential difference of 10 Volts is applied between the plates. The electric field between the plates will be
 (a) $20 \frac{N}{C}$ (b) $500 \frac{N}{C}$
 (c) $250 \frac{N}{C}$ (d) $250 \frac{N}{C}$
- Q.133** A sinusoidal current is represented by the equation $i = I_0 \sin \theta$. Which equation represents the sinusoidal current with both if frequency and amplitude are doubled
 (a) $2I = I_0 \sin(2\theta t)$ (b) $I = 2I_0 \sin(2\theta t)$
 (c) $I = I_0 \sin(2\theta t)$ (d) $I = 4I_0 \sin \theta$

- Q.134 A current in the coil flowing in clock wise direction decreases gradually with the passage of time the direction of induced current is
(a) Clockwise (b) Anticlockwise
(c) Upward (d) Downward
- Q.135 The dielectric constant k of an insulator cannot be
(a) 3 (b) 6
(c) 8 (d) ∞
- Q.136 A charged particle is projected into a region of uniform and parallel, E and B fields. The force on the particle is:
(a) Zero (b) Along the field lines
(c) Perpendicular to the field lines (d) At some angle $< 90^\circ$ with the field lines
- Q.137 Who introduced the concept of electric field lines?
(a) Michael Faraday (b) Ampere
(c) Maxwell (d) Shawan
- Q.138 What is the magnitude of a point charge which produces an electric field of 2 NC^{-1} at a distance of 60 cm ? ($1/4\pi\epsilon_0 = 9 \times 10^9 \text{ Nm}^2\text{C}^{-2}$)
(a) $8 \times 10^{-11} \text{ C}$ (b) $2 \times 10^{-12} \text{ C}$
(c) $3 \times 10^{-11} \text{ C}$ (d) $6 \times 10^{-10} \text{ C}$
- Q.139 An external agency carries -5 C of charge from infinity to a point in an electrostatic field and performs 100 joule of work. The potential at the given point is
(a) 10 V (b) -10 V
(c) 20 V (d) -20 V
- Q.140 A metallic sphere of diameter 30 cm , carries a charge of $600 \mu\text{C}$. Find electric field intensity at surface of sphere?
(a) $54 \times 10^3 \text{ NC}^{-1}$ (b) $13.5 \times 10^3 \text{ NC}^{-1}$
(c) $54 \times 10^7 \text{ NC}^{-1}$ (d) $2.4 \times 10^8 \text{ NC}^{-1}$
- Q.141 The substance having negative temperature co-efficient is:
(a) Carbon (b) Tungsten
(c) Iron (d) Gold
- Q.142 Uniform electric field exist
(a) Near positive charge
(b) Near negative charge
(c) Between two equal and oppositely charged plates
(d) Between two equal and oppositely charged infinite plates
- Q.143 Refer to the figure maximum deflection in the galvanometer occurs when



- (a) The magnet is pushed toward the coil
(b) The magnet is stationary at the center of coil
(c) The magnet is rotated about the axis of the coil
(d) The number of turns in the coil is reduced
- Q.144 Primary and secondary coils of a transformer have 50 and 200 turns respectively. When primary is connected to 9 volt battery secondary voltage is
(a) 90 (b) 36
(c) 18 (d) Zero
- Q.145 The primary and secondary coils of a transformer are linked
(a) Electrically (b) Magnetically
(c) Chemically (d) Are not linked at all
- Q.146 If a resistor is traversed in the direction opposite to current potential change across it is taken as
(a) Positive (b) Negative
(c) Zero (d) Both a & b
- Q.147 Presence of dielectric always
(a) Increases the electrostatic force (b) Reduces the electrostatic force
(c) Does not affect the electrostatic force (d) Doubles the electrostatic force

- Q.148 The value of Coulomb's constant (k) in SI units is:
 (a) $9 \times 10^9 \text{ Nm}^2\text{C}^{-2}$ (b) $9 \times 10^9 \text{ NC}^2\text{m}^{-2}$
 (c) $9 \times 10^9 \text{ N}^{-1}\text{m}^2\text{C}^2$ (d) $9 \times 10^9 \text{ Nm}^2\text{C}^2$
- Q.149 Two opposite point charges of same magnitude separated by distance $2d$, electric potential mid-way between them is:
 (a) 1 V (b) 2 V
 (c) 3 V (d) 0 V
- Q.150 Two charges $1 \mu\text{C}$ and $5 \mu\text{C}$ separated by 20 cm, the ratio of electric forces acting on them will be:
 (a) 1 : 2 (b) 1 : 5
 (c) 1 : 1 (d) 5 : 1
- Q.151 The electrostatic force between two charges is 42 N. If we place a dielectric of $\epsilon_r = 2.1$ between the charges then the force become equal to:
 (a) 42 N (b) 84 N
 (c) 20 N (d) 2 N
- Q.152 It is required to suspended a proton of charge ' q ' and mass ' m ' in an electric field the strength of the field must be:
 (a) $E = \frac{mg}{qv}$ (b) $E = \frac{q}{mg}$
 (c) $E = \frac{mg}{q}$ (d) $E = \frac{qv}{B}$
- Q.153 For an open circuit, terminal potential difference ' V_t ' is:
 (a) $V_t = 2\text{emf}$ (b) $V_t = \text{emf}$
 (c) $V_t > 2\text{emf}$ (d) $V_t < 2\text{emf}$
- Q.154 Magnetic force on a moving charged particle is perpendicular to the _____
 (a) Magnetic field (b) Electric field
 (c) Velocity of the particle (d) Magnetic field and velocity of the particle
- Q.155 Mutual induction has a practical role in the performance of the
 (a) Motor (b) Generator
 (c) Choke (d) Transformer
- Q.156 A charge of $2 \times 10^{-7} \text{ C}$ is acted upon by a force of 0.1N. Determine the distance to the other charge of $4.5 \times 10^{-7} \text{ C}$, both the charges are in vacuum.
 (a) 0.03 (b) 0.05
 (c) 0.07 (d) 0.09
- Q.157 A charge of 0.10C accelerated through a potential difference of 1000V acquires kinetic energy
 (a) 200J (b) 100J
 (c) 1000J (d) 100 eV
- Q.158 Equal charges are given to two spheres of different radii. The potential will
 (a) Be more on the smaller sphere
 (b) Be more on the bigger sphere
 (c) Be equal on both the spheres
 (d) Depend on the nature of the materials of the spheres
- Q.159 A, B and C are three points in a uniform electric field. The electric potential is

 (a) Maximum at a (b) Maximum at b
 (c) Maximum at c (d) Same at all the three points a, b and c
- Q.160 The capacity of a parallel plate condenser is $5\mu\text{F}$. When a glass plate is placed between the plates of the condenser, its potential becomes $1/8^{\text{th}}$ of the original value. The value of dielectric constant will be
 (a) 1.6 (b) 5
 (c) 8 (d) 40

- Q.161 A positive charge of $6\mu\text{C}$ moves between two points through an electric field. Work done by the electric field on the charge is 30 mJ . What is the potential difference between the two points?
 (a) 3 kV
 (b) 4 kV
 (c) 5 kV
 (d) 6 kV
- Q.162 A positive charge is moved from a low potential to a high potential point then the electric potential energy.
 (a) Increase
 (b) Decrease
 (c) Will remain the same
 (d) Nothing definite can be predicted
- Q.163 Which of the following statements is true? For the junction in the network shown in Figure



- (a) $I_3 - I_4 = I_3 - I_2 + I_1$
 (b) $I_2 + I_3 + I_5 = I_1 + I_4$
 (c) $I_1 + I_2 + I_3 = I_4 + I_5$
 (d) $I_1 - I_2 - I_3 - I_4 + I_5 = 0$
- Q.164 The term 'RC' has same unit as that of:
 (a) Potential
 (b) Capacitance
 (c) Energy
 (d) Time
- Q.165 When a RC circuit is connected across a battery amount of charge deposited on plates is _____ times the equilibrium charge after one time constant.
 (a) 0.63
 (b) 0.67
 (c) 0.75
 (d) 0.86
- Q.166 Electric Intensity due to oppositely charge plates is given by
 (a) $\vec{E} = \frac{\sigma}{2\epsilon_0} \hat{r}$
 (b) $\vec{E} = \frac{\sigma}{\epsilon_0} \hat{r}$
 (c) $\vec{E} = \frac{2q}{\epsilon_0} \hat{r}$
 (d) $\vec{E} = \frac{q\sigma}{\epsilon_0} \hat{r}$
- Q.167 Two equal and opposite charges separated by a small distance are said to be
 (a) Tripole
 (b) Polaroid
 (c) Monopole
 (d) Dipole
- Q.168 One kind of seismometer is called inertial because it is based on newton's
 (a) 1st law
 (b) 2nd law
 (c) 3rd law
 (d) Gravitational law
- Q.169 A coil of 100 turns is linked by a flux of 20 m Wb . If this flux is reversed in a time of 2 ms , the average emf induced in a coil
 (a) 1000 V
 (b) 2500 V
 (c) 2000 V
 (d) 3000 V
- Q.170 The motional emf depends upon
 (a) Strength of magnet
 (b) Length of conductor
 (c) Speed of conductor
 (d) All of these
- Q.171 The mutual inductance (M) can be expressed by
 (a) $M = \frac{\epsilon_i}{\Delta I_p / \Delta I_s}$
 (b) $M = \frac{\epsilon_i}{\Delta I_s / \Delta I_p}$
 (c) $M = \frac{\epsilon_s}{\Delta I_s / \Delta I_p}$
 (d) $M = \frac{\epsilon_s}{\Delta I_p / \Delta I_s}$
- Q.172 The working of A.C generator is based upon the
 (a) Self-induction
 (b) Mutual induction
 (c) Electromagnetic induction
 (d) All of these
- Q.173 _____ in a circuit is defined as that current which passes from a point at higher potential to a point at lower potential as if it represents a movement of positive charge
 (a) Conventional current
 (b) Electric field
 (c) Electric current
 (d) Electronic current

Q.174 During discharging process energy dissipated in the form of heat in the wires will be

(a) $\frac{1}{2}QV$

(b) $\frac{Q^2}{C}$

(c) CV^2

(d) QV

Q.175 A $2\mu\text{F}$ capacitor which is initially uncharged, a $25\text{ K}\Omega$ resistor, a switch and a 100V battery are connected in series. When the switch is closed, the initial current in the circuit is

(a) 0

(b) 40mA

(c) 4mA

(d) 4A

Q.176 What is the ratio of equivalence capacitance of two identical capacitors when connected in series and parallel?

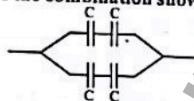
(a) $\frac{1}{4}$

(b) 4

(c) 2

(d) $\frac{1}{2}$

Q.177 The equivalent capacitance of the combination shown in the fig is



(a) $\frac{C}{2}$

(b) C

(c) $2C$

(d) $4C$

Q.178 An induced emf is produced when a magnet is plunged into a coil. The magnitude of induced emf does not depend upon

(a) The number of turn in the coil

(b) The speed with which the magnet is moved

(c) The strength of magnet

(d) The resistivity of the wire of the coil

Q.179 A coil has self-inductance $L = 2\text{mH}$ and the current changes at the rate of 10^3 A/s . The emf induced is

(a) 1V

(b) 3V

(c) 2V

(d) 4V

Q.180 The emf induced in AC Generator is ϵ . If the angular speed of the coil is tripled then the emf induced is

(a) ϵ

(b) 3ϵ

(c) 2ϵ

(d) 4ϵ

ENGLISH

SPOT THE ERROR:

In the first type of sentences, some segments of each sentence are underlined. Your task is to identify that underlined segment of the sentence, which contains the mistake that needs to be corrected.

Q.181 She must also know that the woman's Reservation Bill has very little chance of being

(a) (b)

passed because of the nature of the opposition for it from all quarters.

(c) (d)

Q.182 Because of the recent strike in the mills, less men will be recruited in the coming season.

(a) (b) (c) (d)

Q.183 Finally, after long years of hardship, he succeeded which completely altered his

(a) (b) (c)

outlook of life.

(d)

Q.184 News came across in the morning; a whole holiday was decreed for the school.

(a) (b) (c) (d)

Q.185 He looked such a dandy that tonga-wallas at catching sight of him whipped up their

(a) (b) (c)

horses and raced towards him.

(d)

- Q.186 Since they couldn't buy their way to Eton or Harrow, they swallowed the bait.
(a) (b) (c) (d)
- Q.187 He could walk scarcely, and it was a hard job getting him down the steep slope.
(a) (b) (c) (d)
- Q.188 Just laws are no restraint on the freedom of the good, for the good man desires nothing that a just law interferes to.
(a) (b) (c) (d)

CORRECTION:

In each of the following questions, four alternative sentences are given. Choose the CORRECT one and fill the Circle corresponding to that letter in the MCQ Response Form.

- Q.189
- (a) The audience said that How beautifully she is singing!
 - (b) The audience exclaimed with wonder that she was singing very beautifully.
 - (c) The audience told that she is singing beautifully.
 - (d) The audience exclaimed with wonder that she is singing very beautifully.
- Q.190
- (a) I appealed to her to look for my children during my absence, and she acceded my request.
 - (b) I appealed her to look after my children during my absence, and she acceded to my request.
 - (c) I appealed her to look after my children during my absence, and she acceded my request.
 - (d) I appealed to her to look after my children during my absence, and she acceded to my request.
- Q.191
- (a) Any modern poet would thrill to have his poems compare with John Keats.
 - (b) Any modern poet would be thrilled to have his poems compared with those of John Keats.
 - (c) Any modern poet would be thrilled to have his poems compared to those of John Keats.
 - (d) Any modern poet would thrill to have his poems compared to John Keats.
- Q.192
- (a) Our workers in site are not only efficient about their respective trades but also loyal for their work.
 - (b) Our workers for site are not only efficient at their respective trades but also loyal of their work.
 - (c) Our workers on site are not only efficient for their respective trades but also loyal to their work.
 - (d) Our workers at site are not only efficient in their respective trades but also loyal to their work.
- Q.193
- (a) He went into politics harder than anyone else, and never gave up his ambition.
 - (b) He went in politics harder than anyone else, and never gave up his ambition.
 - (c) He went to politics harder than anyone else, and never gave away his ambition.
 - (d) He went for politics harder than anyone else, and never gave off his ambition.
- Q.194
- He said to the librarian, "The book I am returning is the best I have ever read."
(Choose the correct indirect sentence)
- (a) He said to the librarian that the book he is returning was the best he has ever read.
 - (b) He said to the librarian that the book I am returning is the best I have ever read.
 - (c) He told the librarian that the book he was returning was the best I have ever read.
 - (d) He told the librarian that the book he was returning was the best he had ever read.
- Q.195
- (a) You will love our steel, canvas garden chairs.
 - (b) You will love our steel, canvas, garden chairs.
 - (c) You will love our steel and canvas garden chairs.
 - (d) You will love our garden, steel, canvas chairs.



Q.196

- (a) The tailor asked him that he will have the suit ready by the next evening.
- (b) The tailor asked him that he would had the suit ready by the next evening.
- (c) The tailor asked him if he would have the suit ready by the next evening.
- (d) The tailor asked him if he will like the suit ready by the next evening.

Sentence Completion:

Fill in the blanks with appropriate word.

Q.197 College students are _____ homesickness during their first week away from home.

- (a) Menaced by
- (b) Opted for
- (c) Prone to
- (d) Persisted in

Q.198 My little brother will _____ his grievances under his breath but never tell me when I make him angry.

- (a) Pant
- (b) Presume
- (c) Negate
- (d) Mumble

Synonyms

Choose the word that is most nearly **SIMILAR** in meaning to the word in capital letters.

Q.199 Prerogative

- (a) Entitlement
- (b) Contentment
- (c) Enlightenment
- (d) Resentment

Antonyms

Choose the word **OPPOSITE** in meaning to CAPITALIZED word given above.

Q.200 Promptly

- (a) Surreptitiously
- (b) Tardily
- (c) Expeditiously
- (d) Conspicuously

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